

The Visible Hand: A Summary

What follows is my summary of [The Visible Hand](#) by Alfred D. Chandler, Jr.

It's difficult today to imagine what American companies were like before the 1840s. They were small concerns, owned and operated by the same person in one location, and focusing on a particular type of product (cotton, provisions, wheat, dry goods, hardware, drugs) and one piece of the distribution chain (retailing, wholesaling, importing, exporting). Their corporate structure (the partnership), accounting techniques (double-entry bookkeeping), and financial instruments (letters of credit) were essentially unchanged from those used by the Italians in the 1390s.

Bigger projects were pursued through personal relationships between small firms: family farms had their slaves grow crops, which they sold to the local merchant, who shipped it to his son or nephew in London, who sold it to the local merchants there, and thence to the customers. (At the same time, credit headed the other direction.) As time went on, the number of intermediaries only increased: factors and jobbers and brokers and dealers and commission agents. Coordination was handled through the market.

(The one exception was the Bank of the United States, which had branches in many locations and thus could coordinate on something of a national scale. But it was politically unpopular and both the First and Second banks were allowed to expire by Congress.)

There was incredible inefficiency, but it mattered little since the technology of the time did not allow for great speed or volume. Canal boats were still pulled by animals, for whom four miles an hour was an impressive speed, and most products (clothing, furniture, clocks, nails) were produced by hand in people's homes through the "putting-out" system. There were a handful of textile factories, but since they depended on water-power there was only room for a few of them.

All this changed with the railroads, a technological improvement which allowed business to move their products vastly faster. Careful coordination was essential (one didn't want trains crashing into each other), market entry expensive (constructing a railroad line cost a great deal of money), and network effects powerful (a railroad was much more valuable if it could move things all the way across the country).

As a result, the railroads built big enterprises, with professional managers to operate them. The businesses were the first to be structured along largely modern lines (the line-and-staff system): a board of directors appointed a professional manager as president, who oversaw a series of vice presidents supervising various company-wide topics (finance, traffic, legal) as well as a general manager. The general manager oversaw a number of divisions, each with departmental managers with profit and loss responsibility and a staff of their own. Each department sent statistics back to headquarters, allowing senior management to improve overall efficiency.

In addition to consolidating various different roles into a single organization, the railroads consolidated different organizations into a cartel with a few large players who coordinated pricing schemes and extracted the maximum each merchant was able to pay. The quintessential player in this era of empire-building was the speculator Jay Gould and his nemesis Cornelius Vanderbilt.

Gould got his start in 1868 when Vanderbilt attempted to seize control of the Erie railroad, the nearest competitor to his New York Central. Gould succeeded in stopping him and became the Erie's largest stockholder and president. He then leased two additional lines and purchased shareholder proxies for two more lines, which he used to vote new directors into power, who then agreed to sell the lines to the Erie. (The courts and legislature quickly moved to stop him and the Pennsylvania seized control of the lines.) He merged with additional lines in Illinois, Ohio, and Michigan, before attempting to corner the market on gold, leading to a stock market crash. The crash forced other lines to sell, but Vanderbilt had more funds and bought them up.

Gould had more success in the telegraph industry, where consolidation came even more rapidly. Gould's railroads had contracts with Western Union allowing it to operate telegraph lines along the road. He canceled the contracts and signed agreements to partner with the lines attached to several other railroads. After he bought ocean lines to Latin America, Western Union was scared enough to purchase the competitor. (Gould sealed the deal by offering Vanderbilt, Western Union's largest stockholder, a controlling stake in one of his railroads if he persuaded the board to go through with the purchase.) After the sale, Gould started a new company with the telegraph lines of his remaining railroads, signed several additional deals, and announced plans to build a transatlantic cable. Western Union stock plummeted and Gould bought it up, becoming his competitor's largest shareholder. He used this position to persuade Western Union to purchase his competitor at an inflated price and become the controlling member of Western Union's board, a position he used to fend off any future competitors.

Theodore Vail played a similar role at AT&T, while local utilities (power, light, heat) ended up being operated by regulated "natural monopolies". Soon the nation's infrastructure was entirely owned by either public (e.g. the post office) or private (AT&T) monopolies. In each case, it was operated by professional managers who planned and controlled the entire system.

The new national infrastructure (railroads, telegraph, steamships, post office) allowed for new national distributors (wholesalers, department stores, mail-order houses, chains) which were themselves organized and managed in the same ways. Department stores, for example, had a manager in charge of each department, with only things like janitors and delivery people shared across the entire store.

Such big stores moved to also take the place of wholesalers by building their own distribution networks and, in time, take control of manufacturing as well. Large mail-order houses like Sears Roebuck began building systems of conveyer belts and pneumatic tubes for ensuring orders got assembled promptly — along with systems for punishing those who held the line up. And the geographically-distributed chain stores organized themselves under regional managers who kept tabs on local performance with a team of inspectors.

Geographic centralization, automation, and employee monitoring allowed such national concerns to move goods faster, which made them more efficient than the numerous local stores they put out of business. It was economies of speed, not of scale.

A similar speeding-up happened in production. The opening of the coal mines provided cheap power for new factories with mass-production machines while railroads provided a market their output. The factories were set up as simple assembly lines operating continuous-process machines, like those built to cut wheat, solder cans, and roll cigarettes. Henry Ford extended this system into assembly with his "moving assembly line" in which continuous conveyor belts moved parts past the workers. In each factory, managers personally oversaw the line foremen who oversaw each part of the process. By the 1880 census, 80% of manufacturing employees worked in factories, with the putting-out system remaining only for clothing.

Fredrick W. Taylor encouraged factories to speed up even further by following his system of “scientific management”. He proposed a company’s lines be run by a planning department which would conduct careful time-and-motions studies to discover the optimal way to carry out each part of the process. Line-level managers would then be responsible for ensuring that individual employees kept producing at the optimal rate. Few followed Taylor’s recommendations exactly, especially his suggestion to place the planning department in charge of the lines, but many companies adopted his ideas to accelerate their factories.

The new speeds, in turn, produced so many products that the national stores couldn’t sell them all, leading the manufacturers into distribution and marketing of their own. They began building a regional sales staff, doing national ad campaigns, and buying up competitors. The result was national brands like American Tobacco, Diamond Match, Quaker Oats, Pillsbury Flour, Campbell Soup, Heinz, Borden, Carnation, Libby, Procter & Gamble, and Kodak — most of which remain leaders today.

Why did these few leaders achieve such domination? It was not thru their superior technology — they leased the machines they use for assembly. Nor was it their marketing acumen — they all hired professional marketers for the job. And it could not be the power of their brands, for they all invented these brands from scratch. Instead, it was their superior organization that provided the main barrier to entry. Anyone who wanted to compete would have to build their own national network of managers, buyers, and salesmen.

And even this was made more difficult for competitors. The first-mover was able to start small, use profits to fund growth, and use the resulting economies of scale to lower prices while expanding nationally. But any competitor would have to start out by competing against this national, low-price network. They would either have much higher per-item costs since they were producing so much less or they would have to borrow enormous amounts of capital to build a high-volume network from the beginning. And who would want to fund such a risky endeavor? Newcomers did appear (Kellogg, Postum, Colgate, Babbitt) but they were rare and the industries remain oligopolies.

Industrial products (lumber, petroleum, metal, etc.) also began forming national oligopolies. It started with industry-wide trade associates, which quickly became cartels that conspired to fix prices. However, the incentive to cheat on the cartels by secretly lowering prices was too great and, since cartels were illegal, there was no legal way to prevent it. So companies moved to form trusts, in which one firm would hold in trust the shares of the other firms in exchange for shares of itself. When the Sherman Antitrust Act outlawed trusts, New Jersey stepped in to allow the creation of holding companies — easy-to-establish corporations which simply held the stock of other corporations. But in the early 1900s the courts ruled that even this form violated the law and the companies moved to merge outright, forming a single corporation.

But such horizontal integration was rarely very profitable. The real success always came from vertical integration: taking control of suppliers and distribution.

Managers who oversaw the factories carefully measured their efficiency. They wanted to maximize the use of the expensive equipment they had purchased, so they repeatedly pushed to speed up the lines and use them more efficiently. This increased efficiency resulted in increased production which resulted in corporate growth which naturally required more lines.

At the same time corporations continued this within-industry expansion, higher-level managers saw the generic processes at work and pushed for between-industry expansion: reusing the same management structures and same tools to grow the company and brand into new businesses.

And thus, managerial capitalism — the corporate form in which professional managers ran large, national corporation whose owners had at most veto power over their efforts — spread across the country. Their administrative coordination allowed for greater productivity and lower costs, but required a managerial hierarchy which could carry out more functions. The managers also allowed them to increase volume, but also allowed the managers to ensure a permanent place for themselves. The task of management became more technical and specialized and management became separated from ownership. As a result, managers were able to direct the company in ways that favored stability over profits, and the resulting huge enterprises changed the shape of the economy.

You should follow me on twitter [here](#).

March 2, 2008